

## Claims

- [c1] 1.A method for enhancing process control, the method comprising:  
 initiating a manufacturing process to create a product, wherein said initiating includes setting a control on a machine in response to an initial system model;  
 and  
 tuning said manufacturing process in response to said initial system model, said tuning comprising:  
 running said machine in response to the initial system model;  
 monitoring a primary output parameter of said product; and  
 performing an adaptation process while said manufacturing machine is running, the adaptation process including:  
 adjusting said control on said machine;  
 updating said initial system model to define an updated system model in response to said adjusting said control; and  
 running said machine in response to said updated system model.
- [c2] 2.The method of claim 1 wherein said adaptation process is initiated in response to said primary output parameter being outside of a selected primary output parameter value range.
- [c3] 3.The method of claim 1 wherein said driving further comprises:  
 monitoring a secondary output parameter of said product; and  
 alerting an operator if said secondary output parameter is outside of a selected secondary output parameter value range.
- [c4] 4.The method of claim 3 wherein said monitoring a secondary output parameter includes displaying a current value for said secondary output parameter.
- [c5] 5.The method of claim 4 wherein said monitoring a secondary output parameter further includes displaying said selected secondary output parameter value range.
- [c6] 6. The method of claim 3 wherein said alerting includes recommending a corrective action to said operator.
- [c7] 7.The method of claim 1 wherein operator response actions and time to

respond are tracked.

- [c8] 8.The method of claim 1 wherein said method further comprises:  
creating a second system model, wherein said second system model is a copy of  
said initial system model;  
initiating a second manufacturing process to create said product, wherein said  
initiating a second manufacturing process includes setting a control on a  
second machine in response to an input value included in said second system  
model; and  
tuning said second manufacturing process in response to said second system  
model.
- [c9] 9.The method of claim 1 further comprising creating a process control report.
- [c10] 10.The method of claim 9 wherein said process control report includes  
production data.
- [c11] 11.The method of claim 9 wherein said process control report includes  
downtime data.
- [c12] 12.The method of claim 9 wherein said process control report includes yield  
loss data.
- [c13] 13.The method of claim 9 wherein said process control report includes system  
maintenance data.
- [c14] 14.The method of claim 9 wherein said process control report includes system  
change order data.
- [c15] 15.The method of claim 9 wherein said process control report includes operator  
response tracking data.
- [c16] 16.A system for optimizing process control, the system comprising:  
a storage device for storing process control data;  
a manufacturing machine;  
a process control system in communication with said manufacturing machine  
and said storage device, said process control system implementing a process

comprising:

initiating a manufacturing process to create a product, wherein said initiating includes setting a control on a machine in response to an initial system model;

and

driving said manufacturing process in response to said initial system model, said driving comprising:

tuning said machine in response to said initial system model;

monitoring a primary output parameter of said product; and

performing an adaptation process while said manufacturing machine is running, the adaptation process including:

adjusting said control on said machine;

updating said initial system model to define an updated system model in response to said adjusting said control; and

running said machine in response to said updated system model.

[c17] 17.The system of claim 16 wherein said adaptation process is initiated in response to said primary output parameter being outside of a selected primary output parameter value range.

[c18] 18.The system of claim 16 wherein said driving further comprises:  
monitoring a secondary output parameter of said product; and  
alerting an operator if said secondary output parameter is outside of a selected secondary output parameter value range.

[c19] 19.The system of claim 18 wherein said monitoring a secondary output parameter includes displaying a current value for said secondary output parameter.

[c20] 20.The system of claim 19 wherein said monitoring a secondary output parameter further includes displaying said selected secondary output parameter value range.

[c21] 21.The system of claim 18 wherein said alerting includes recommending a corrective action to said operator.

[c22] 22.The system of claim 16 wherein operator response actions and time to

respond are tracked.

- [c23] 23.The system of claim 16 wherein the process implemented by the process control system further comprises:  
creating a second system model, wherein said second system model is a copy of said initial system model;  
initiating a second manufacturing process to create said product, wherein said initiating a second manufacturing process includes setting a control on a second machine in response said second system model; and  
tuning said second manufacturing process in response to said second system model.
- [c24] 24.The system of claim 16 wherein the process implemented by said process control system further comprises creating a process control report.
- [c25] 25.The system of claim 16 further comprising a network providing communication between said process control system and said storage device.
- [c26] 26.The system of claim 16 further comprising a network providing communication between said process control system and said manufacturing machine.
- [c27] 27.The system of claim 16 further comprising a host system in communication with said storage device.
- [c28] 28.The system of claim 27 wherein said host system is in communication with said process control system.
- [c29] 29.The system of claim 27 further comprising a user system in communication with said host system.
- [c30] 30.A storage medium encoded with machine-readable computer program code for optimizing process control, the storage medium storing instructions for causing a process control system to implement a method comprising:  
initiating a manufacturing process to create a product, wherein said initiating includes setting a control on a machine in response to an initial system model; and

tuning said manufacturing process in response to said initial system model, said driving comprising:

running said machine in response to said initial system model;

monitoring a primary output parameter of said product; and

performing an adaptation process while said manufacturing machine is running, the adaptation process including:

adjusting said control on said machine;

updating said initial system model to define an updated system model in response to said adjusting said control; and

running said machine in response to said updated system model.